Work Order ID 57783

April 14, 2010 2:55:54 PM

Item ID: D212-664-201 **Accept** **Setup Start**

Revision ID: **Stop**

Item Name: Crosstube Aft

Start Date: 14/04/2010 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 05/05/2010 **Req'd Qty:** 1.00 **Customer:**

Reference:

Approvals: **Process Plan:** BJ **Date:** 10-4-14 **Tooling:** _____ **Date:** _____ **Run Start**

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____ **Stop**

Draw Nbr	Revision Nbr
D212-664-241	Rev D

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
100	DOCUMENT CONTROL	0.00							
DC	**Memo**	0.00							
Document Control	Photocopy bluefile and create labels as per PPP D212-664-201				CHG003				

10 for BG 10/05/31

& 10/05/31

110	Pick Kit	0.00							
Packaging	Packaging								
Packaging	**Memo**	0.00							

(1K) 20 WB 10-05-06

120		0.00							
CNC Bend 2	BENDING MACHINE - CROSSTUBES								
CNC Alpha 160 Bender	**Memo**	0.00							
	Bend tube as per Dwg D212-664-241 using CNC bender program 212-af and Folio FT007								

(1K) 8 WB 10-05-06

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Work Order ID 57783

April 14, 2010 2:55:54 PM

Item ID: D212-664-201 **Accept** **Setup Start**

Revision ID: **Stop**

Item Name: Crosstube Aft

Start Date: 14/04/2010 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 05/05/2010 **Req'd Qty:** 1.00 **Customer:**

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Run Start**

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____ **Stop**

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	QC15- Crosstube Dimensional Check	0.00							
QC	**Memo**	0.00 Satisfactio				(10)			
Quality Control									
140		0.00							
Crosstubes	Crosstubes								
Crosstubes	**Memo**	0.00							

1-Drill pilot holes in tube as per Dwg D212-664-241 using drill Jig DT8550 & DT8551

MB 10-05-11

2-Ream hole to finish size in tube as per Dwg D212-664-241using drill Jig DT8550 & DT8551.Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes.

AWM 10-5-10

3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D212-664-241

4-Scribe part # and batch # using vibrating stylus as per Dwg D212-664-241

MB 10-05-11

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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NOTE: Date & initial all entries

Work Order ID 57783

April 14, 2010 2:55:54 PM

Item ID: D212-664-201 **Accept** **Setup Start** **Stop**

Revision ID:

Item Name: Crosstube Aft

Start Date: 14/04/2010 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 05/05/2010 **Req'd Qty:** 1.00 **Customer:**

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Run Start** **Stop**

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150	Crosstubes Chemical Conversion	0.00				1	D	-	AWM 10-5-10
HandFXtube	**Memo**	0.00							
Hand Finishing Crosstubes	Chemical Conversion Coat as within 24 hours of bending and drilling								
160	QC3- Inspect Part Finish	0.00							
QC	**Memo**	0.00							
Quality Control									
170	QC5- Inspect part completeness to step on W/O	0.00							
QC	**Memo**	0.00							
Quality Control									

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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NOTE: Date & initial all entries

Work Order ID 57783

April 14, 2010 2:55:54 PM

Item ID: D212-664-201 **Accept** **Setup Start**

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Item Name: Crosstube Aft

Start Date: 14/04/2010 **Start Qty:** 1.00 **Cust Item ID:**

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Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Run Start**

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____ **Stop**

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180	Outsource process - NDT per QSI038 4.1	0.00							
Outsource2	**Memo**	0.00				CL	10/5/13		(1)
Outsource process - NDT	Liquid Penetrant Inspection as per QSI 038 Issue P/O: 11889 LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order								
190	Receive & Inspect for Damage & Mat'l Certs	0.00							
Packaging	Packaging								
Packaging	**Memo**	0.00							
	Ensure copy of NDT results attached to work order.								
200	QC5- Inspect part completeness to step on W/O	0.00							
QC	**Memo**	0.00							
Quality Control	Inspect for damage & ensure results are as per Dwg D212-664-241								

10/5/13 (1)

10 05 17 (1)

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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NOTE: Date & initial all entries

Work Order ID 57783

April 14, 2010 2:55:54 PM

Item ID: D212-664-201 **Accept** **Setup Start**

Revision ID: **Stop**

Item Name: Crosstube Aft

Start Date: 14/04/2010 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 05/05/2010 **Req'd Qty:** 1.00 **Customer:**

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Run Start**

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____ **Stop**

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210 SprayPaint Spray Painting	Spray Painting per QSI005 4.2 SprayPaint	0.00				MH	10	05	25 (1)
	Memo 1-Prime inside and outside crosstube as per QSI 005 4.2 2-Paint outside crosstube with White Imron as per QSI 005 4.2 PRIME: Start Time: 10:00 Fininsh Time: 11:30 PAINT: Start Time: 3:30 Finish Time: 4:30	0.00							
220 QC Quality Control	QC14- Inspect Spray Paint	0.00							
	Memo Then,Wrap in plastic bag to protect from scratches	0.00							

KT 10-05-26

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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NOTE: Date & initial all entries

Work Order ID 57783

April 14, 2010 2:55:54 PM

Item ID: D212-664-201 **Accept** **Setup Start**

Revision ID: **Stop**

Item Name: Crosstube Aft

Start Date: 14/04/2010 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 05/05/2010 **Req'd Qty:** 1.00 **Customer:**

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Run Start**

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____ **Stop**

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230		0.00							
Crosstubes	Crosstubes					ml	10	05	26 (1)
Crosstubes	**Memo**	0.00							

1- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe

2-Install supports with magnobond as per QSI 015 Adhere for for 12 Hrs
A/R 6398 Magnobond Batch: 114021
Expiry Date: 01/2011

3-Install clamps as per Dwg D212-664-241. Torque clamps to 80-100 in lb. ml 10.05.28

240	QC5- Inspect part completeness to step on W/O	0.00							
QC									
Quality Control	**Memo**	0.00							

8 10 05 28

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

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			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Work Order ID 57783

April 14, 2010 2:55:54 PM

Item ID: D212-664-201 **Accept** **Setup Start** **Stop**

Revision ID:

Item Name: Crosstube Aft

Start Date: 14/04/2010 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 05/05/2010 **Req'd Qty:** 1.00 **Customer:**

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Run Start** **Stop**

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
250 Packaging Packaging	Pick Kit	0.00				10-5-31			
	Memo	0.00							
260 QC Quality Control	QC4- 100% Inspect kits for completeness	0.00							
	Memo	0.00							
270 Packaging Packaging	Packaging Loc 103	0.00		Rev E		10-5-31			
	Memo Identify and pack for shipping as per PPP D212-664-201	0.00							

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

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Work Order ID 57783

April 14, 2010 2:55:54 PM

Item ID: D212-664-201 **Accept** **Setup Start** **Stop**

Revision ID:

Item Name: Crosstube Aft

Start Date: 14/04/2010 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 05/05/2010 **Req'd Qty:** 1.00 **Customer:**

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Run Start** **Stop**

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
280	QC21- Final Inspection - Work Order Release	0.00					10/06/01		
QC	**Memo**	0.00							
Quality Control									

R 10-5-31

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

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			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Picklist Print

April 14, 2010 2:55:58 PM

Work Order ID: 57783

Parent Item: D212-664-201

Parent Item Name: Crosstube Aft

Start Date: 14/04/2010 **Required Date:** 05/05/2010

Start Qty: 1.00 **Required Qty:** 1.00

Comments: IPP Rev:E□04.02.16□Reformat□K/DS
IPP Rev:F 06-03-29 Remove Coments on Pick List JLM
IPP Rev:G 07-04-30 As per Rev C JLM
IPP Rev:H 08-05-22 up date Qty of rubber cushion DD verified by:EC

D212-664-201TRN	Manufactured	No	110	Each	0.0000	1.0000

Crosstube Turning Detail

B-58381 MD 10-05-06

D3595-063-530	Manufactured	No	230	Each	102.0000	2.0000

RUBBER CUSHION

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
FP	102	
50030	26	
51776	76	

ML 10.05.26

D2940-1	Manufactured	No	230	Each	31.0000	2.0000

Support

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
LG	31	
45203	1	
47748	16	
52752	14	

ML 10.05.26

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Picklist Print

April 14, 2010 2:55:58 PM

Work Order ID: 57783

Parent Item: D212-664-201

Parent Item Name: Crosstube Aft

Comments: IPP Rev:E□04.02.16□Reformat□K/DS
IPP Rev:F 06-03-29 Remove Coments on Pick List JLM
IPP Rev:G 07-04-30 As per Rev C JLM
IPP Rev:H 08-05-22 up date Qty of rubber cushion DD verified by:EC

Start Date: 14/04/2010 **Required Date:** 05/05/2010
Start Qty: 1.00 **Required Qty:** 1.00

MS21920-28	Purchased	No	230	Each	87.0000	4.0000
Clamp(per MIL-DTL-8783C)						

Warehouse / Location	Loc Qty	Loc Code
OFFSHORE		
FG	5	
105884	5	
Main Warehouse		
LG	82	
112624	2	
112863	50	
113776	30	

MW 10.05.26

D3428-1	Manufactured	No	250	Each	10.0000	1.0000
Placard						

B58754 10-5-3

Warehouse / Location	Loc Qty	Loc Code
Main Warehouse		
ST056	10	
55565	10	

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Picklist Print

April 14, 2010 2:55:59 PM

Work Order ID: 57783

Parent Item: D212-664-201

Parent Item Name: Crosstube Aft

Comments: IPP Rev:E□04.02.16□Reformat□K/DS
IPP Rev:F 06-03-29 Remove Coments on Pick List JLM
IPP Rev:G 07-04-30 As per Rev C JLM
IPP Rev:H 08-05-22 up date Qty of rubber cushion DD verified by:EC

Start Date: 14/04/2010 **Required Date:** 05/05/2010
Start Qty: 1.00 **Required Qty:** 1.00

MS21042L6	Purchased	No		250	Each	257.0000	6.0000	10-5-31
Nut								

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST300	257	
111578	257	6

AN960JD616 NA3149006625	Purchased	No		250	Each	85.0000	18.0000	M 114348 10-5-31
Washer								

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST347	85	
113149	85	

AN6-40A	Purchased	No		250	Each	77.0000	4.0000	10-5-31
Bolt								

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST343	77	
112828	50	4
113422	27	

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
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Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

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NOTE: Date & initial all entries

Picklist Print

April 14, 2010 2:55:59 PM

Work Order ID: 57783

Parent Item: D212-664-201

Parent Item Name: Crosstube Aft

Comments: IPP Rev:E□04.02.16□Reformat□K/DS
IPP Rev:F 06-03-29 Remove Coments on Pick List JLM
IPP Rev:G 07-04-30 As per Rev C JLM
IPP Rev:H 08-05-22 up date Qty of rubber cushion DD verified by:EC

Start Date: 14/04/2010 **Required Date:** 05/05/2010
Start Qty: 1.00 **Required Qty:** 1.00

AN6-41A	Purchased	No	250	Each	80.0000	2.0000

Bolt

10-5-31 SP

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST344	80	
112489	5	
112805	25	
113288	50	

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

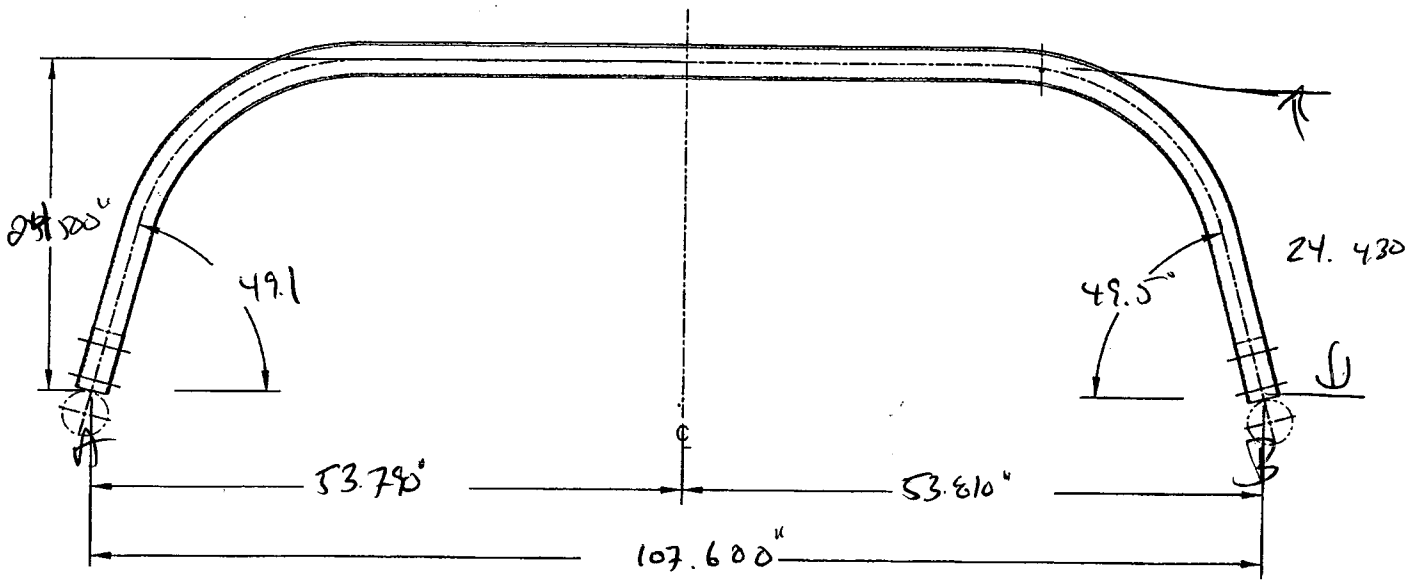
Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order:	57783
Description: Crosstube High Aft (205/212)	Part Number:	D212-664-201
Inspection Dwg: D212-664-241 **Rev:** A M 10.05.06		Page 1 of 1

Required Dimension	Min	Max
Height	24.17	24.43
1/2 Span	53.59	53.85
Angle	49	52
Total Span	107.18	107.70



Comments
One height over tol OK CP 10.05.10

QC15 Inspection	
Date	10/05/10

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	07.05.08	Dimensions updated per Dwg rev. C	KJ/JLM	

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

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			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Item	Qty -241	Qty -241B	Part Number	Description
1	X		D212-664-241	CROSSTUBE ASSEMBLY (205/212 HIGH AFT)
2		X	D212-664-241B	CROSSTUBE ASSEMBLY (214 HIGH AFT)
3	1	1	D6006-129	CROSSTUBE
4	2	2	D2940-1	SUPPORT
5	4	4	D3595-063-530	RUBBER CUSHION
6	4	4	MS21920-28	CLAMP (OR MS21920-30)
7	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 57783
BS 10-4-14

GENERAL NOTES:

1) MATERIAL: MANUFACTURED FROM D6006-129
   FINISHED LENGTH = 124.362±0.020
2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
   PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
   PAINT OUTSIDE PER DART QSI 005 4.2
3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
4) UNITS: INCHES UNLESS OTHERWISE NOTED.
5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
6) IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
7) WEIGHT: D212-664-241 = 44.2 lbs (PER IIN-D212-664)
   D212-664-241B = 44.2 lbs (PER IIN-D212-664)
8) PART IS SYMMETRIC ABOUT CENTERLINE.
9) RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALY, TRANSITION SHOULD BE SMOOTH.
10) BEND PROGRESSIVELY WITH A MINIMUM OF 5 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
12) INSTALL D2940-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2940-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
13) INSTALL MS21920-28 CLAMPS (OR -30) WITH D3595-063-530 RUBBER CUSHIONS TO SECURE THE D2940-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
2009 -10- 29

REV.	DESCRIPTION	BY	DATE
D	REFORMAT/REVISE GENERAL NOTES/PART LIST; REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS; ADD -241B (ZN D4-2, B4-2); REMOVED REF & ADD TOLERANCES (ZN D8-3 & C4-3, C6-3 & A8-3); RELOCATED FLAG #6 PER PAR 08-046 (ZN A5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4	RF	09.09.30
C	REMOVE -1009 ABRASION STRIP; ADD MAGNOBOND 6398, CUSHION, REVERSE CLAMPS	PH	07.03.08
B	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	PH	05.02.04
A	NEW ISSUE	PH	00.12.12

DESIGN	PH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA
DRAWN	RF	
CHECKED		DRAWING NO. REV. D
MFG. APPR.		D212-664-241 SHEET 1 OF 4
APPROVED		TITLE SCALE
DE APPR.		CROSSTUBE ASS'Y (205/212 HI AFT) NTS
DATE	09.09.30	

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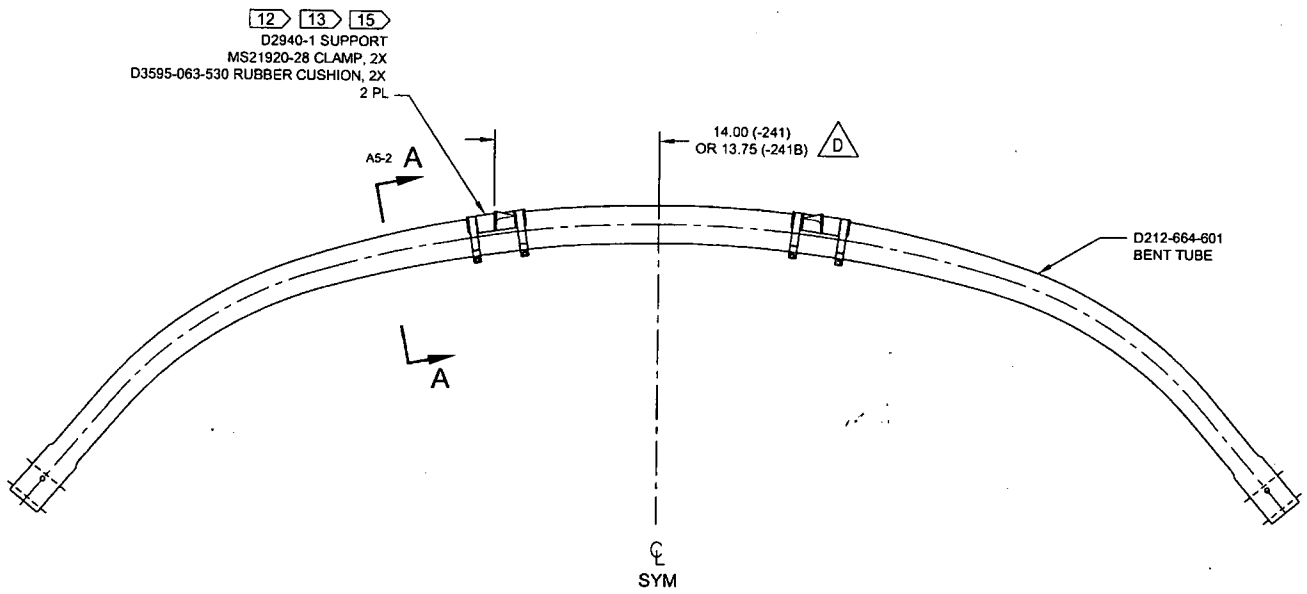
W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

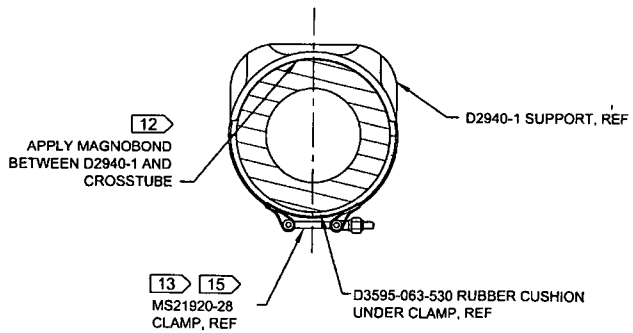
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DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries



D212-664-241/-241B
ASSEMBLY DETAIL D

w/o 57783



SECTION A-A D6-2
SCALE 4X

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2009 -10- 28

DESIGN	PH	**DART AEROSPACE LTD** HAWKESBURY, ONTARIO, CANADA
DRAWN	RF	
CHECKED		DRAWING NO. D212-664-241 REV. D SHEET 2 OF 4
MFG. APPR.		
APPROVED		TITLE CROSSTUBE ASS'Y (205/212 HI AFT) SCALE NTS
DE APPR.		
DATE 09.09.30		

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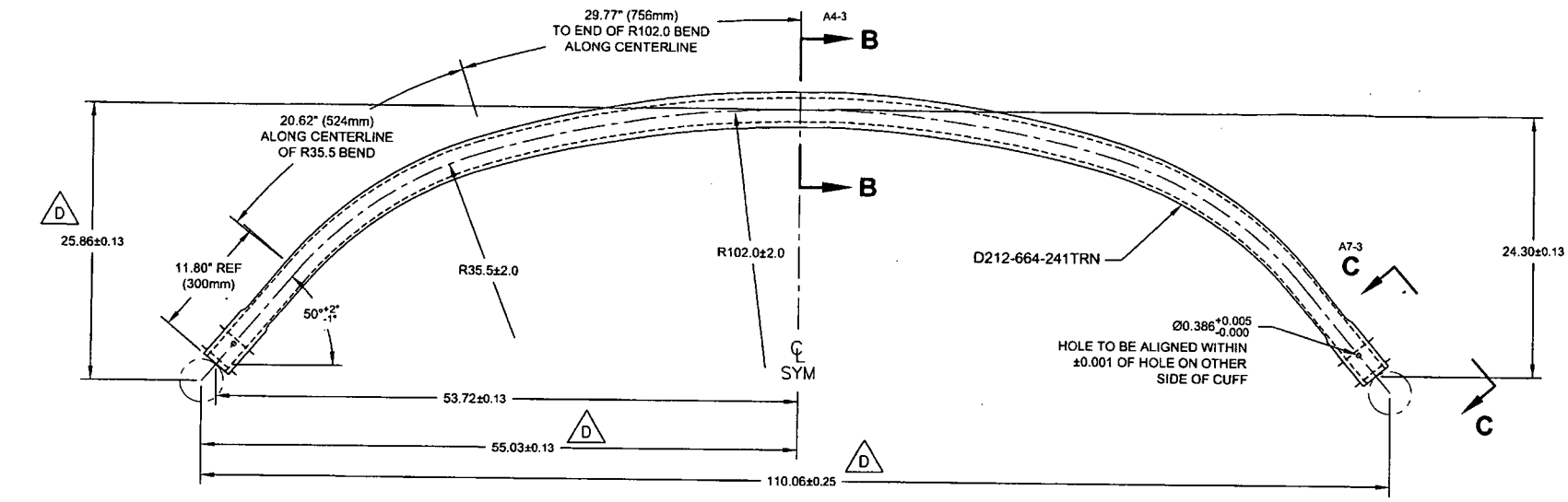
W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

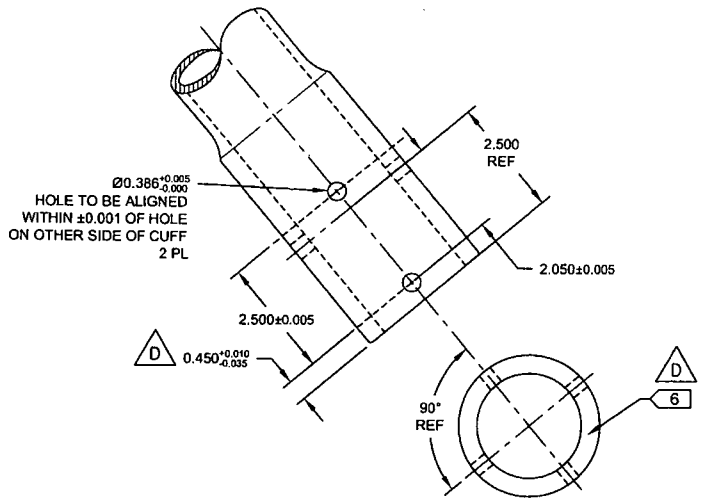
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DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

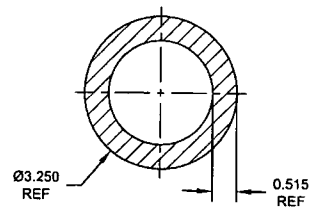


D212-664-601 10 D
BENDING AND DRILLING DETAIL

w/o 57783



VIEW C-C: CUFF DETAIL D2-3
SCALE 3X



SECTION B-B D4-3
SCALE 4X

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2009 -10- 29

DESIGN	AH	**DART AEROSPACE LTD** HAWKESBURY, ONTARIO, CANADA
DRAWN	RF	
CHECKED		DRAWING NO. D212-664-241 REV. D SHEET 3 OF 4
MFG. APPR.		
APPROVED		TITLE CROSSTUBE ASS'Y (205/212 HI AFT) SCALE NTS
DE APPR.		
DATE 09.09.30		

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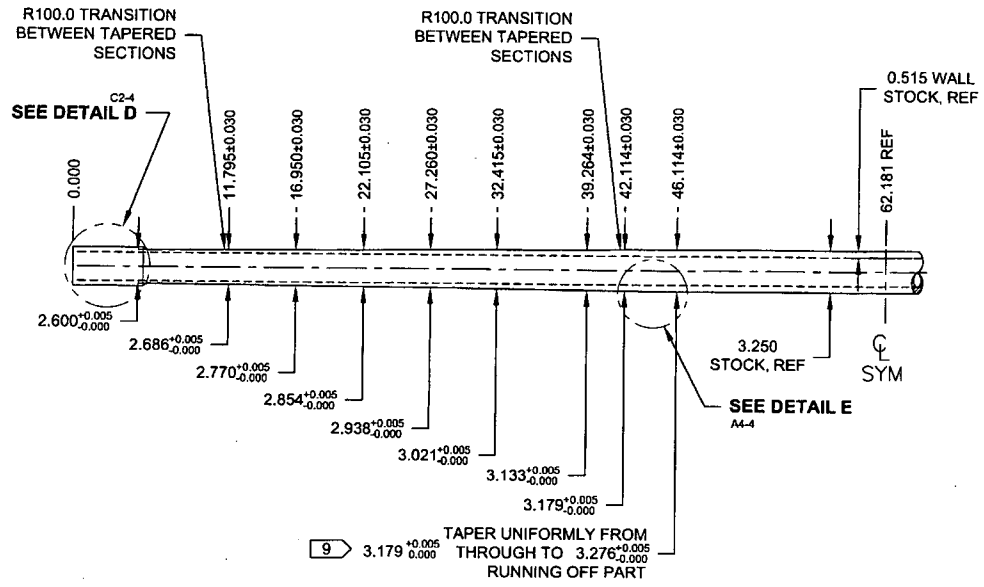
W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

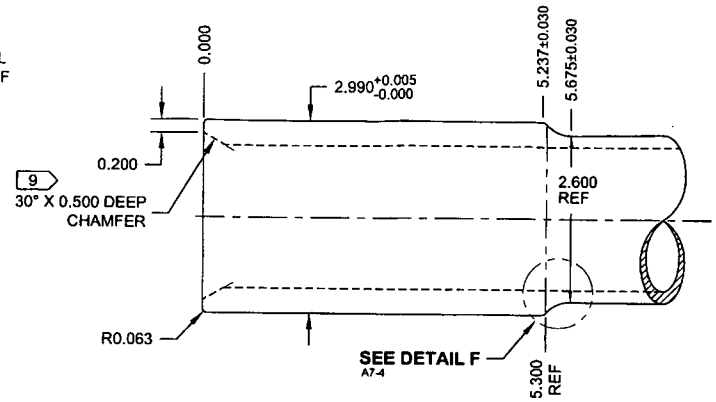
Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

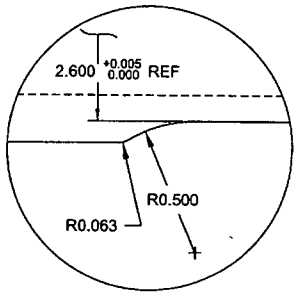
NOTE: Date & initial all entries



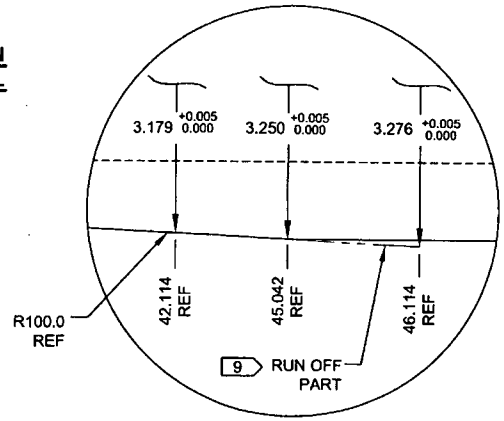


DETAIL D: CROSSTUBE CUFF D8-4
SCALE 5X

D212-664-241TRN TURNING DETAIL



DETAIL F: CUFF TRANSITION C2-4
SCALE 10X



DETAIL E: TAPER RUN-OFF C5-4
NOT TO SCALE

w/o 57783

RELEASED
2009 -10- 29

DESIGN	PH	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. D
MFG. APPR.		D212-664-241	SHEET 4 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE ASS'Y (205/212 HI AFT)	NTS
DATE	09.09.30		

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W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

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			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

ACUREN

LIQUID PENETRANT TEST REPORT

P- 15323

PAGE 1 OF 1

CLIENT: DART AEROSPACE | DATE: MAY 13-2010 | TIME: AM ☑ PM ☐

ATTENTION: LINDA/CHANTEL | ACUREN JOB NO.: 198-10 07554

ADDRESS: 1270 ABERDEEN, HAMILTON ON. | PO/WO NO.: [illegible] —

WORK LOCATION: SHOP

ACCEPTANCE STD.: ASTM 1417 | REV./DATE: 2007

PROJECT: F.P.I. ON CROSS TUBES

ITEM(S) EXAMINED: 5 PCS

JOB DESCRIPTION

PROCEDURE NO. LT-0002 REV./DATE | TECHNIQUE NO. LT-2 REV./DATE

PART NO.: — | MATERIAL: ALUMINUM ALUMINUM | THICKNESS: —

SCOPE: WET FLOURESCENT LIQUID PENETRANT INSPECTION CARRIED OUT 100% EXTERNAL

TEST DETAILS

METHOD	☑ FLUORESCENT	☐ VISIBLE		☑ WATER WASH	☐ SOLVENT REMOVABLE	☐ POST EMULSIFIED	
FAMILY BRAND	MAGNAFLUX			BLACK LIGHT S/N 16459	☐ OUTPUT > 1000 µ W/CM²	☐ AMBIENT < 2 fc	
PENETRANT	2467	MINIMUM DWELL TIME	45/10 MIN.	LIGHTING EQUIP. ☐ FLASHLIGHT ☐ TROUBLELIGHT	☐ OUTPUT>100 fc @ SURFACE		
PENETRANT REMOVER	420	MINIMUM DRY TIME	>10 MIN.	OTHER LABINO			
DEVELOPER	SKD 52	MINIMUM DWELL TIME	10 MIN.	LIGHT METER S/N 1098866	CAL DUE DATE —		
DEVELOPER TYPE	☑ NON AQUEOUS	☐ AQUEOUS	☐ DRY				

TEST SURFACE

SURFACE CONDITION	☐ AS GROUND	☐ AS WELDED	☑ MACHINED	☐ SHOT BLASTED	☑ CLEAN BARE METAL
SURFACE TEMPERATURE	☐ < - 4°C/ 20°F	☐ - 4°C/ 20°F TO 10°C/50°F		☐ 10°C/50°F TO 52°C/125°F	☐ > 52°C/125°F

RESULTS- (☐ METRIC ☐ IMPERIAL)

1 - CROSS TUBE - W.O. 58297 ✓

1 - CROSS TUBE - W.O. 58488 ✓

1 - CROSS TUBE - W.O. 58487 ✓

1 - CROSS TUBE - W.O. 57783 ✓

1 - CROSS TUBE - W.O. 57784 ✓

10-05-17

Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE: Ken Titley (PRINT) | [signature] (SIGNATURE) | DTR # E27408

TECHNICIAN (SIGNATURE): [signature] | REPORT REVIEWED BY:

NAME (PRINT): MIKE JOHNSTON (1ST TECHNICIAN) | (2ND TECHNICIAN) | NAME | INITIALS

CGSB LEVEL 2 SNT LEVEL — | CGSB LEVEL — SNT LEVEL —

CGSB REG. NO 6066 | CGSB REG. NO —

WHITE – CLIENT COPY CANARY – OFFICE COPY PINK – TECHNICIAN COPY GOLD – OFFICE COPY